

Solve the equation.

$$1. \frac{3x^2}{3} = \frac{108}{3}$$

$$\sqrt{x^2} = \sqrt{36}$$

$$\boxed{x = \pm 6}$$

Rewrite the expression using exponent notation.

$$3. \sqrt[3]{x^2}$$

$$x^{2/3}$$

Simplify the expression.

$$5. (25a^{10}b^{16})^{1/2}$$

$$25^{1/2} a^5 b^8 = \boxed{5a^5b^8}$$

$$7. (4^4x^{-4})^{-1/2}$$

$$4^{-2}x^2 = \boxed{\frac{x^2}{16}}$$

Let $f(x) = 4x - 6$ and $g(x) = x + 8$. Perform the indicated operation.

$$8. f(2) + g(4)$$

$$4(2) - 6 + 4 + 8$$

$$8 - 6 + 4 + 8$$

$$\boxed{14}$$

$$10. f(x) \cdot g(x)$$

$$(4x - 6)(x + 8)$$

$$4x^2 + 32x - 6x - 48$$

$$\boxed{4x^2 + 26x - 48}$$

$$2. \sqrt[3]{(x-2)^3} = \sqrt[3]{27}$$

$$x - 2 = -3$$

$$\boxed{x = -1}$$

Rewrite the expression using radical notation.

$$4. (2t)^{1/2} = \boxed{\sqrt{2t}}$$

$$4t^{1/2}$$

$$6. \sqrt{\frac{18x^5y^4}{49xz^3}}$$

$$\frac{\sqrt{18x^4y^4}}{\sqrt{49xz^3}} = \boxed{\frac{3x^2y^2\sqrt{2}}{7z\sqrt{z}}}$$

$$9. f(x) - g(x)$$

$$(4x - 6) - (x + 8)$$

$$\boxed{3x - 14}$$

$$11. f(g(x))$$

$$f(x + 8)$$

$$4(x + 8) - 6$$

$$4x + 32 - 6$$

$$\boxed{4x + 26}$$

Find the inverse of the function.

12. $y = \frac{1}{3}x + 4$

$$x = \frac{1}{3}y + 4$$

$$x - 4 = \frac{1}{3}y$$

$$3x - 12 = y$$

$$\boxed{y = 3x - 12}$$

13. $y = 2x^2 - 1$

$$x = \sqrt{\frac{y+1}{2}}$$

$$x+1 = 2y^2$$

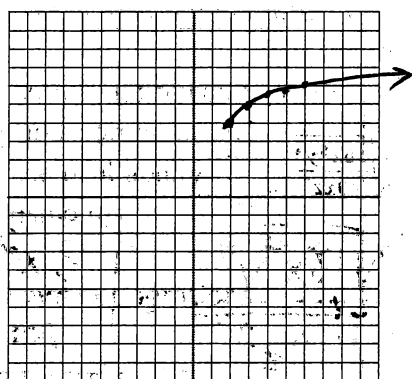
$$\frac{x+1}{2} = y^2$$

$$\boxed{y = \pm \sqrt{\frac{x+1}{2}}}$$

Graph the function. State the domain and range.

14. $y = \sqrt{x-2} + 4$

x	y
2	4
3	5
4	5.4
5	5.7
6	6

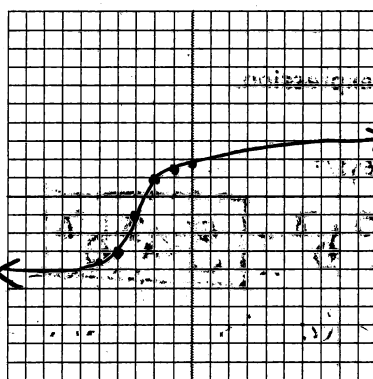


Domain: $x \geq 2$

Range: $y \geq 4$

15. $y = 2\sqrt[3]{x+3} - 1$

x	y
-4	-3
-3	-1
-2	1
-1	1.5
0	1.9



Domain: \mathbb{R}

Range: \mathbb{R}

Solve the equation. Don't forget to check for extraneous solutions!

16. $(\sqrt{3x+7})^2 = (4)^2$

$$3x+7=16$$

$$3x=9$$

$$\boxed{x=3}$$

18. $(x-3)^2 = (\sqrt{x-1})^2$

$$x^2 - 6x + 9 = x - 1$$

$$x^2 - 7x + 10 = 0$$

$$(x-5)(x-2) = 0$$

$$\boxed{x=5} \text{ or } \cancel{x=2}$$

17. $\sqrt{3x} - \sqrt{x+6} = 0$

$$+\sqrt{x+6} \quad +\sqrt{x+6}$$

$$(\sqrt{3x})^2 = (\sqrt{x+6})^2$$

$$3x = x+6$$

$$\frac{2x}{2} = \frac{6}{2}$$

$$\boxed{x=3}$$